

lel which has been observed by algologists in other parts of Florida and the world. It is interesting to learn from L. H. Tiffany (1944:99) that he had similar experiences with collections of Oedogoniales. He states that "A pond scarcely more than an acre in area located in a cypress "strand" just south of Arcadia, Florida, yielded thirty-one species and two varieties of *Oedogonium* and *Bulbochaete*. This large number was not equaled anywhere else in the state, although most of the ponds in cypress swamps were highly productive. It is very difficult to understand the diversity of yield in what appear to be very similar bodies of water. Nearly every algologist has had the experience of discovering a pond, or other habitat, in a given area unusually rich in species when compared with apparently similar habitats in the same area. Until biological investigations can be carried out in different localities over a period of years, the relations of environmental factors to algal productivity as well as the accident of introduction through carrier agents such as birds can be surmised but not accurately gauged."

After discussing *dormancy*, permanency of habitat, proper environmental conditions, and the accident of dispersal or rise of species by some heritable variation, he (Tiffany, 1944:100) concluded that "these intriguing problems cannot all be solved in a day or a year or even a lifetime, but the patient accumulation of ecological, physiological, morphological, and genetical data on the *Oedogoniales* will some day make it possible for us to see through much of the haze that now surrounds the explanation for the distribution of the members of this algal group."

SUMMARY

In this study of factors affecting growth and distribution of Myxophyceae collected in Sinks I, II, and III, a total of 22 genera and 33 species were identified. Four physical, four chemical and two biological factors were considered relative to growth and distribution. Only one of the ten factors mentioned seemed to have the rank of a limiting factor in growth and multiplication of units, and thus indirectly influenced distribution by reason of increasing population. This factor was the hydrogen-ion. This conclusion was supported by evidence that the magnitude of growth in higher plants was definitely due to the effect of the hydrogen-ion.

ACKNOWLEDGEMENTS

I wish to acknowledge, with much appreciation, assistance received from the following scientists: Professor J. R. Watson for Gainesville, Florida 1941-42 and 43 precipitation records; Dr. R.

A. Carrigan for pH determinations; Dr. Fred H. Heath for chemical analyses; Drs. Arthur A. Bless and Cyril L. Comar for radioactivity studies of material collected in Sinks I, II, and III; and Dr. Francis Drouet, Chicago Museum of Natural History, for precision studies and determination of the Myxophyceae listed in this paper.

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THE CRICKET-FROG OF PENINSULAR FLORIDA

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Field studies in the southeastern states and laboratory examination of large series of freshly preserved specimens have convinced us that the cricket-frogs of peninsular Florida comprise a recognizable, homogeneous population. For this form the following name is available:

Acris gryllus dorsalis (Harlan)

(Plate 1, upper fig.)

FLORIDA CRICKET-FROG

Rana dorsalis Harlan, Journ. Acad. Nat. Sci. Philadelphia, ser. 1, 5: 340, January, 1827.

DIAGNOSIS

A cricket-frog with *two* distinct dark postfemoral stripes present; no anal warts; toes very slender and delicate; size small (adult females seldom exceeding 20 mm in snout-to-vent length). The thigh patterns and anal wartiness of *dorsalis*, *gryllus*, and *crepitans* are illustrated upon the accompanying plate.

TYPE LOCALITY

As more than one form of *Acris* occurs in Florida, we have checked the itineraries of collectors who visited Florida prior to 1827, in an attempt to find the most likely source of the specimens which Harlan used in describing *dorsalis*. Fortunately, this was before many herpetological explorations of the State had been made, and it appears probable that Harlan's specimens were obtained by one of two parties.

In 1818, Thomas Say, in company with William Maclure (then President of the Philadelphia Academy), George Ord and T. R. Peale, ascended the St. John's River to "about 100 miles from its mouth" (as far as Picolata in what is now St. John's County), seeking "subjects of Nat. Hist. of which the acquisition was the sole object of our undertaking" (see Fox, 1901: 235). In 1822, according to Vignoles (1823: 67), Captain John Le Conte ascended the St. John's to about the same point that John Bartram had reached in 1766. Dr. Francis Harper informs us that this was about the latitude of Titusville. We do not know where or how much Le Conte collected on this trip, but it may be significant that Carr (1938: 105) considers that the specimens described by Le Conte from the St. John's as *Testudo floridana* (= *Pseudemys f. floridana*) were probably "collected in the lower (northern) reaches of the river."



PLATE 1.

Miss Mary Cleeves, del.

Typical postfemoral patterns of *Acris*. x8.

Upper. *Acris g. dorsalis*. CM no. 17123, Fla., Alachua Co., 1/2 mile east of Gainesville.

Center. *Acris g. gryllus*. CM no. 16845a, Ga., Liberty Co., Riceboro.

Lower. *Acris crepitans*. CM no. 4800a, Mich., Washtenaw Co., Ann Arbor.

So far as we know, these were the only two major herpetological collecting expeditions made to Florida prior to Harlan's description of *dorsalis* in 1827. Dr. Harper informs us that he believes, on the basis of his investigations of early biological explorations in Florida, that the material used by Harlan probably was collected on one of these two trips.

We have specimens of *Acris* collected on the St. John's River, in St. John's County, by the junior author, which are typical of *dorsalis* as herein defined. We, therefore, restrict the type locality of *Rana dorsalis* Harlan to the lower (northern) one hundred miles of the St. John's River.

DESCRIPTION

Harlan's description, although brief, is very much to the point and there appears to be no doubt that he had specimens of the peninsular form at hand. Dunn (1938: 154) states that he has been unable to locate the types of *dorsalis*; hence decision as to the applicability of Harlan's name must be made on the basis of characters used in his description. This is quoted in full:

Char.—Above fuscous, smooth, with a broad, white, longitudinal vertebral band, bifurcating anteriorly, and extending over each eye: snout above, pale or whitish: beneath white: throat and inner part of the thighs freckled: buttocks white, with two brownish transverse lines: a white line on the side of the neck, extending from the eye to the scapula.

Length of the body 8/10 of an inch; of the legs 1-1/2 inches. This measurement being taken from the largest of seven specimens. Inhabits Florida. Specimens in the Cabinet of the A. N. S.

Of the two heretofore recognized forms of *Acris*, *gryllus* and *crepitans*, only the former need be considered in connection with this description, for *crepitans* would not be described by any careful observer as having "buttocks white with two brownish transverse lines"; nor does it inhabit the southeastern lowlands. Occasional southern specimens of *gryllus* do have such a thigh pattern, but the fact that Harlan redescribes *gryllus* very accurately on the same page indicates that he was well acquainted with this form. Furthermore, many of our specimens of *dorsalis* display exactly the dorsal pattern mentioned by Harlan, namely, "a broad, white longitudinal vertebral band, bifurcating anteriorly, and extending over each eye"; the latter portion of this statement is the most important, for specimens of *gryllus* rarely exhibit an anterior bifurcation of the dorsal stripe; in *gryllus* this stripe usually begins at the apex of the postocular triangle. Furthermore, *dorsalis* does not exhibit the elongate dorsal warts so frequently seen in *gryllus*, although many specimens have the dorsum well covered

with small rounded warts; the size mentioned (.8 inch = 20 mm) corresponds accurately with the measurements of a large number of *dorsalis* and is too small for the largest specimen in almost any series of adult *gryllus* selected at random.

VARIATION

The typical pattern of the posterior thigh of *dorsalis* consists of two longitudinal white stripes and two longitudinal brown stripes. When the thigh is viewed from the rear, the stripes from the dorsal to the ventral surface are as follows: 1) A clear white stripe bordering the colored dorsal surface of the thigh and very well defined along this border because both the dorsal ground color and the superimposed spots are generally darker in *dorsalis* than in *gryllus*; both edges of this stripe are usually straighter than in *gryllus*, the stripe is usually broader, and it approaches the vent more closely at its proximal end than it does in *gryllus*. 2) A dark brown stripe beneath the superior white stripe, extending from the vent to the knee, usually narrower than the same stripe in *gryllus*, more straight-edged above and below, and frequently narrower than the white stripes which border it. 3) A second or inferior white stripe which is usually equally as distinct as the upper white stripe. The two white stripes vary considerably in width; they may be similar in width, the upper may be the broader, or the lower may be the broader, but, in any event, they appear to have been widened at the expense of the brown stripe which they enclose. Harlan's description of the buttocks as white with two transverse [= longitudinal] brownish lines conveys the correct impression. 4) A light brown stripe beginning immediately below the vent and extending diagonally so that its distal end is always on the ventral surface of the thigh and sometimes (depending upon preservation) the entire stripe is ventral in position. This stripe is rarely as dark as the superior brown stripe, and it is generally uniform in color from edge to edge, not browner at the margins as in those few *gryllus* which display a similar stripe. The inferior brown stripe is almost always visible from behind in *dorsalis* and is always a definite stripe, whereas the most frequent pattern in *gryllus* is a general suffusion of brown below the inferior white stripe, resulting in a triangular dark area which lies immediately below the vent and which reaches a point beneath the knee.

The last mentioned characteristic offers the best means of separating *gryllus* and *dorsalis*, but it is not invariably satisfactory. For example, two of a series of eleven topotypes of *gryllus* have clearly defined inferior brown stripes which are diagonal, but these are the darkest specimens in the series and the white stripes